

~~SECRET~~~~CONFIDENTIAL~~

50X1

DOC <u>3</u>	REV DATE <u>8 MAY 1950</u>	BY <u>018313</u>
ORIG COMP <u>033</u>	OPI <u>56</u>	TYPE <u>06</u>
ORIG CLASS <u>5</u>	PAGES <u>6</u>	REV CLASS <u>0</u>
JUST <u>22</u>	NEXT REV <u>2010</u>	AUTH: HR 10-2

22 February 1955
3613ATTN:

50X1

Dear

50X1

A formal proposal is in the mill and will be handled by our contractual authorities together with your authorities' responsible for similar matters. The proposal embodies the material as agreed upon during our meeting last week.

In the meantime we have given your proposed system further consideration and planned it out in somewhat further detail. For your information there is enclosed a block diagram of the proposed system together with an outline of the operation as envisaged here.

It is proposed to consider the (use of the General Radio frequency standard comprising the two units type 1105A together with type 1100 AP.)

As a result of a preliminary survey of a suitable camera, we believe that the Dumont Type 321 camera is better suited for this job than is the Fairchild mentioned in your original outline of the system. The Fairchild we believe is apt to be wasteful of film and furthermore is apt to jam at critical times. There was an evaluation made by HRB for a government department of the Dumont camera. We reviewed this work and believe the Dumont to be admirably suited. It has many desirable features and is somewhat less expensive than the Fairchild. It certainly is far less wasteful of film. For the communication facilities particularly for the transmission of the pulses between the system stations we believe a Johnson transmitter such as the "Viking" 1 kw amplifier together with the corresponding suitable exciter to be the most practical. We are considering operation in the 2 to 5 mc frequency band as possibly most practical for the particular distances involved. Of course,

~~SECRET~~~~CONFIDENTIAL~~

SECRET

50X1

bandwidth with pulse transmissions becomes a problem but we believe that for the preliminary work a 100 μ sec pulse will not result in troublesome bandwidths and will be satisfactory for, at least, the initial tests.

There have been enumerated a few of our thoughts in connection with the initial planning of this project. Your comments will be appreciated.

With kind regards -

Sincerely yours,

50X1

Project Engineer

NS/mss

Attach: Block Diagram
Operations notes

SECRET

CONFIDENTIAL

SECRET

OUTLINE

- I. Receiving the Signal
 - a) normal antennas and receivers
 - b) received signal displayed on 1/2 dual beam oscilloscope
- II. Method of alerting the out-stations
 - a) radio circuit, land lines, public mail
- III. Timing circuit
 - a) provide a common, comparable marker interval system for comparison and timing purposes.
 - b) By utilizing this portion of the system, it is possible to determine the time difference of arrival of the radio signal at various stations of the system.

SECRET

SECRET**TIMING SYSTEM****Master - Control Station:**

1. Reference signal is generated by a G. R. frequency standard
2. Output freq. passed through a wave shaping circuit.
 - a. shortens rise time so that greater timing accuracy is achieved.
 - b. limits, clips, differentiates the sine wave - gives a series of rather sharp pulses.
3. Wave shaping circuit operated by manual gate.
 - a. other contacts on this gate switch can be used to turn on scope camera motors and reset all controls necessary to start operation.
4. Pulses to a vacuum tube keyer to key a CW radio transmitter.
5. Output of wave shaper through the gate also goes to counter chronograph - to "on" channel.
 - a. may be necessary to devise circuitry to eliminate all but first pulse.
 - b. manual reset of chronograph may be coupled with manual gate of #3.
6. Shaped wave through the gate -- goes to one beam of the oscilloscope.

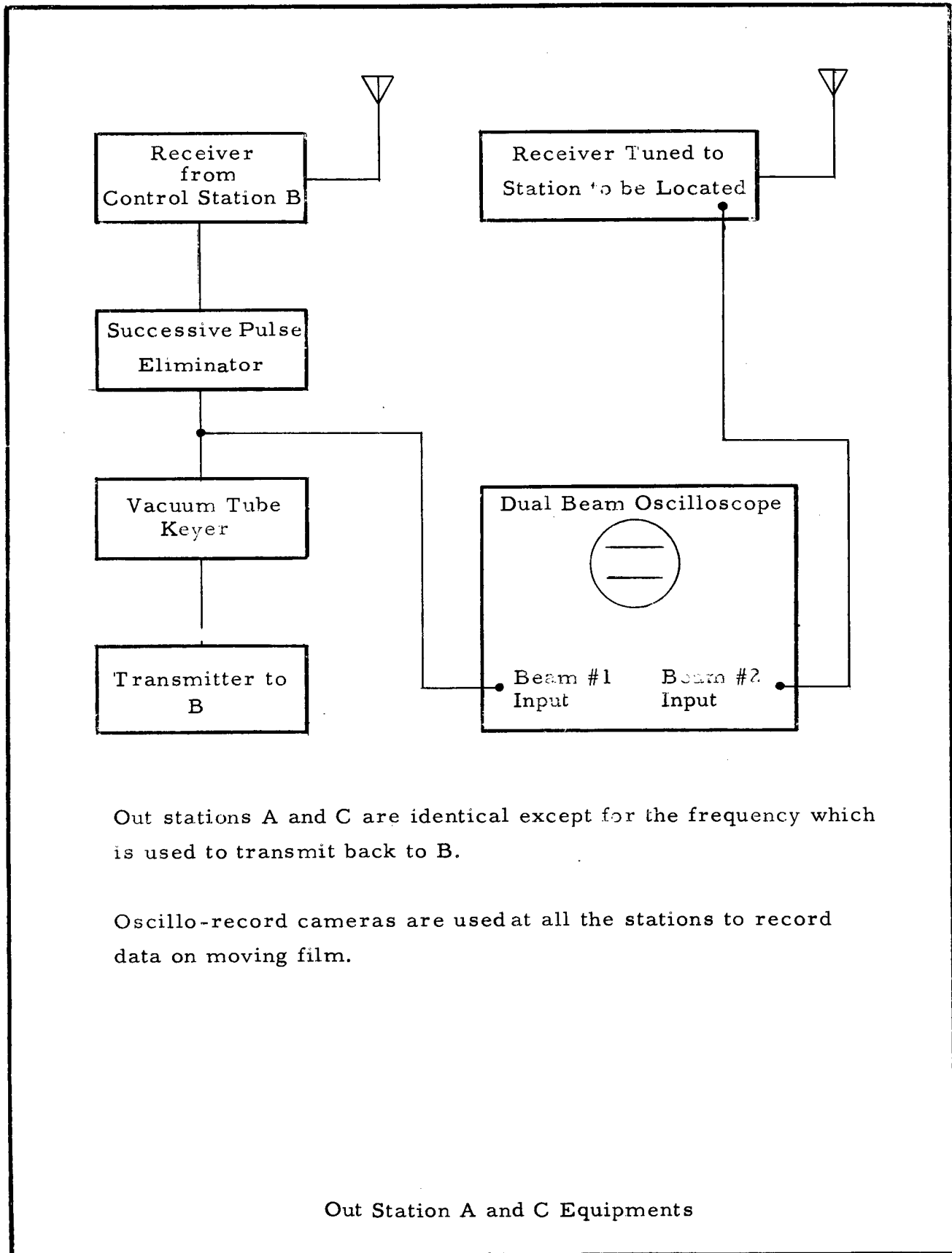
"Out" Stations:

1. Timing signal from microwave receiver is fed to one beam of dual beam oscilloscope.
 - a. timing signal also fed to successive pulse eliminator circuit, with manual reset, and then to keyer tube of transmitter.
 - b. single pulse transmitted back to the control station is used to turn off the chronograph. If for some reason an "out" station cannot cooperate in a bearing, he transmits no pulse back to "control".
2. Camera Control
 - a. A system of turning on camera is suggested - a tone generator at control station when turned on closes a vibrating ~~beam splitter~~ ^{reed relay} at each location. It is suggested that camera be set to run a pre-determined time and then shut off.

Undetermined Factors:

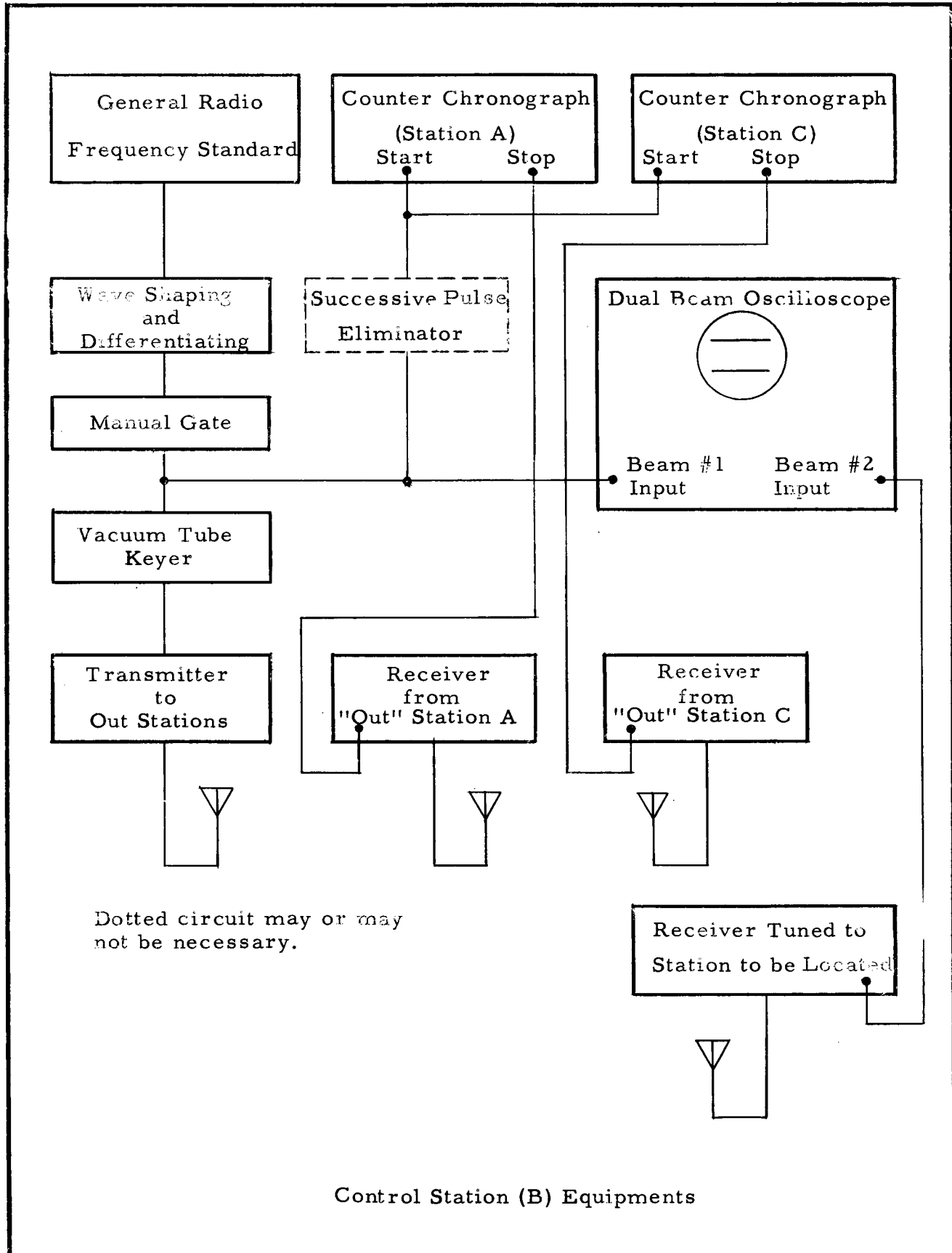
1. Frequency of the timing signal to be transmitted.
2. Speed and length of film used per shot.
3. Value and variability of the delay which timing signal will encounter.

SECRET

SECRET**SECRET**

~~SECRET~~

CONFIDENTIAL

~~SECRET~~

CONFIDENTIAL